DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

PROPOSED TEXT

TITLE 13, CALIFORNIA CODE OF REGULATIONS, DIVISION 2, CHAPTER 2
AMEND ARTICLE 22, SECTIONS 811-818

LIGHTING EQUIPMENT - WARNING LAMPS
(CHP-R-01-02)

Existing text: .....Times New Roman 12 point font.
Additions .....Times New Roman 12 point font with single underline.
Deletions:.....~~**Times New Roman 12 point font with bold strikethrough**~~.

(1) Section 811 is amended to read:

811. Definitions.
(a) **Warning Lamp** - A "warning lamp" is a lamp designed for use on authorized emergency vehicles and prescribed types of special hazard vehicles to indicate the existence of a traffic hazard or to signal other drivers to stop or yield the right of way.
(b) **Warning Lamp Assembly** - A "warning lamp assembly" is a device that consists of a housing with ~~a nonstandard sealed or semisealed optical unit or a housing which has a separable bulb, lens, and reflector~~ one or more light sources and any lenses, reflectors and any other components or devices necessary to provide the required level of performance.
(c) **Warning Lamp Housing** - A "warning lamp housing" is a device that holds a warning lamp unit or the ~~bulb~~ light source(s), ~~lens~~ lens(es), ~~and~~ ~~reflector~~ reflector(s) and other components of a warning lamp assembly.
(d) **Warning Lamp Unit** - A "warning lamp unit" is a sealed or semisealed optical unit designed to meet the dimensional specifications of SAE J571d, June 1976, SAE J572a, January 1972, or SAE J760a, December 1974, and which meets the color and photometric requirements.
(e) **Flashing Lamp** - A "flashing lamp" is a lamp in which the emitted light in a particular direction alternates between on and off either electrically by controlling the current or mechanically by a revolving, oscillating, or other mechanism, or by other means such that the light output in a given direction is discernibly and regularly interrupted or intermittent at the required periodic rate.
(f) **Steady-burning Lamp** - A "steady-burning lamp" is a lamp in which the emitted light in any direction is uninterrupted.
(g) **Light Source** - A "light source" is an individual incandescent bulb, light emitting diode, arc discharge bulb or other device that produces visible light whenever appropriate electrical energy is supplied to it.
NOTE Authority and reference cited: Section 26103, Vehicle Code.

(2) Section 813 is amended to read:

813. General Requirements.
(a) **Flash Rate**. Flashing ~~Warning~~ warning lamps ~~with a tungsten filament~~, other than gaseous discharge lamps**,** shall operate at a rate of 60 to 120 flashes per ~~min~~ minute, with a 40 to 60 percent on-time under all operating conditions. The time between the end of one flash and the beginning of the following flash for a gaseous discharge lamp shall not exceed 0.85 ~~s~~ seconds, which corresponds to a minimum of 70 flashes per minute. Flashes having a light output less than the required minimum shall not be counted in reporting flash rate.
(b) **Voltage**. Warning lamps manufactured for more than one voltage shall comply with all requirements of this title when tested at each voltage. Warning lamps designed to operate on a rated voltage of 12 volts shall be tested at 12.8 volts. Warning lamps designed to operate on a rated voltage of 24 volts shall be tested at 25.6 volts. Warning lamps designed to operate on a rated voltage of other than 12 or 24 volts shall be tested at a voltage equivalent to the voltage provided by the vehicle storage battery charged to 100% capacity with no current drain.
(c) **Exterior Lens Surface**. The outside surface of the illuminated section of the lens shall be smooth with no ribs, ridges, or indentations other than marks of identification, screw holes, and ~~sealed unit~~ aiming pads.
(d) **Double-Faced Lamps**. ~~Stationary~~ Steady burning double-faced lamps ~~with a tungsten filament~~ shall have opaque dividers to minimize exterior light shining through the lamp.
(e) ~~Double-Filament~~ **Multiple Light Source Lamps**. Lamps with two or more ~~filaments~~ individual light sources shall have all ~~filaments~~ light sources operating together when the lamp is steady burning or flashing.
NOTE Authority cited: Section 26103, Vehicle Code.
Reference: Sections 24012 and 26103, Vehicle Code.

(3) Section 815 is amended to read:

815. Temperature and Durability Test Requirements.
~~Revolving, oscillating, and gaseous discharge~~ Flashing warning lamps shall meet the following additional requirements, with all tests conducted on the same sample in the order shown:
(a) **High Temperature Test.** The sample shall be mounted in normal operating position in a circulating air cabinet for 6 ~~h~~ hours at 49 ± 3 ~~°~~ degrees C (120 ± 5 ~~°~~ degrees F). The device shall be off during the first hour and shall operate continuously for the next 5 ~~h~~ hours ~~at a supply~~ with the required voltage ~~of 12.8 or 25.6 V~~ applied at the device terminals.
(b) **Low Temperature Test.** The sample shall be mounted in normal operating position in a circulating air cabinet for 6 ~~h~~ hours at -32 ± 3 ~~°~~ degrees C (-25 ± 5 ~~°~~ degrees F). The device shall be turned on at the end of the sixth hour and operated for 3 ~~min~~ minutes ~~at a supply voltage of 12.8 or 25.6 V~~ with the required test voltage applied at the device terminals before measuring the flash rate.

(c) **Durability Test.** The sample shall be operated continuously for 200 ~~h~~ hours at room temperature in cycles consisting of 50 ~~min~~ minutes on and 10 ~~min~~ minutes off at ~~a supply voltage of 12.8 or 25.6 V~~ the required test voltage.
(d) **Required Performance.** The device shall operate satisfactorily during the tests specified in preceding subdivisions (a), (b), and (c) with no evidence of malfunction. The flash rate shall remain within the required rate for the type of lamp except that the flash rate for lamps used in the low temperature test shall not be less than 50 flashes per minute. The voltage at the terminals of ~~incandescent~~ individual light sources shall be not more than 0.50 ~~V~~ volt below the input terminal voltage of 12.8 ~~V~~ volts for 12-~~V~~ volt units and not more than 1.0 ~~V~~ volt below the required input terminal voltage ~~of 25.6 V~~ for ~~24-V units~~ for lamps intended to operate at 24 volts or more with the device operating. Measurements for the low temperature test shall be made 3 ~~min~~ minutes after the beginning of the last hour of operation and at the end of the test. Measurements for the high temperature test shall be made at the end of the test. Measurements for the durability test shall be made at 100 ~~h~~ hours and at the end of the test.
NOTE Authority cited: Section 26103, Vehicle Code.
Reference: Sections 24012 and 26103, Vehicle Code.

(4) Section 817 is amended to read:

817. Photometric Test Requirements.
The luminous intensity of warning lamps tested as specified in Article 4 of this subchapter, with a reaim tolerance of ± 0.5 ~~deg~~ degree vertical and ± 1.0 ~~deg~~ degree horizontal allowed at each test point, shall be as follows:
(a) ~~Stationary~~ **Steady-burning Warning Lamps** ~~with Tungsten Filaments~~**.** ~~Stationary~~ Steady-burning warning lamps ~~with tungsten filaments~~, and flashing warning lamps which alternate between on and off by electrically controlling the current supplied to the lamp, shall meet the requirements in Table I. The photometric output of flashing lamps shall be reported only while the lamp is on. Warning lamp units shall be aimed for this test so the maximum intensity is on the H-V axis. Warning lamp assemblies shall be mounted for this test in accordance with Section 657.
(b) **Revolving Warning Lamps.** Revolving warning lamps shall meet the requirements in either Table II or Table IV with ~~12.8 or 25.6 V~~ the required test voltage applied to the input terminals of the complete assembly. ~~A revolving lamp with multiple light sources shall meet the photometric requirements with each light source.~~ A revolving lamp that is designed to project a signal throughout a 360-~~deg~~ degree horizontal angle shall be tested with the lamp assembly turned about its vertical axis to the location where the maximum candela reading from the optical unit is reduced the most by any variations in density or shape of the transparent cover or by obstructions in the lamp assembly. A revolving warning lamp that does not project light through a 360-~~deg~~ degree horizontal angle shall comply photometrically about those axes straight to the front, sides, and rear of a vehicle to which the lamp is designed to provide a warning signal. As the lamp rotates, the full projected area of the reflector of each light unit shall be visible along the beam axis as the center of the beam moves from 20 ~~deg~~ degrees left to 20 ~~deg~~ degrees right of the device axis.

(c) **Oscillating Warning Lamps.** Oscillating warning lamps shall meet the requirements in Table III with ~~12.8 V or 25.6 V~~ the required test voltage applied to the input terminals of the complete assembly.
(d) **Gaseous Discharge Warning Lamps.** Gaseous discharge warning lamps shall meet the requirements in Table IV with ~~12.8 V or 25.6 V~~ the required test voltage applied to the input terminals of the complete assembly. Lamps producing 360 ~~deg~~ degree light output shall be rotated in the photometric test to the point where the lowest H-V reading is recorded, at which location the lamp shall meet the flash energy requirements. The candela-seconds shall be reported as the average for ten consecutive flashes.
(e) **Alternative Technologies.** Nothing in this standard shall be construed to prohibit the use of any appropriate technology for light sources provided the appropriate photometric and other requirements for the type of lamp are met. Steady-burning warning lamps, and flashing lamps which alternate between on and off by interrupting the electrical current to the lamp, shall meet the photometric requirements of Class A, B, C or D as shown in Table I. Warning lamps which approximate or simulate the appearance of revolving warning lamps shall meet the photometric requirements of Table II. Warning lamps which approximate or simulate the appearance of oscillating warning lamps shall meet the photometric requirements of Table III.
(f) **Removal from Service.** Any warning lamp assembly which noticeably fails to function properly shall be removed from service. Warning lamp assemblies which utilize multiple light sources shall be removed from service if any individual light source fails to function properly.
Authority cited: Section 26103, Vehicle Code.
Reference: Sections 24012 and 26103, Vehicle Code.

(6) Section 818 is amended to read:

§818. Type of Warning Lamps Used on Emergency Vehicles and Special Hazard Vehicles. Warning lamps on emergency vehicles and special hazard vehicles shall be of the following types:
(a) **Required Red Warning Lamps on Authorized Emergency Vehicles.** The steady burning red warning lamp required to be visible to the front of an authorized emergency vehicle by Vehicle Code Section 25252 shall be a Class A, B or C warning lamp. Motorcycles may instead be equipped with two Class D warning lamps in the front, one of which may flash.
(b) **Permitted Additional Red Warning Lamps on Authorized Emergency Vehicles.** The additional steady burning or flashing red warning lamp permitted by Vehicle Code Section 25252 shall be a Class A, B, C, or E warning lamp.
(c) **Permitted Yellow Warning Lamps on Authorized Emergency Vehicles.** The additional flashing yellow warning lamp permitted on authorized emergency vehicles by Vehicle Code Section 25259 shall be a Class B, C, or E warning lamp. Two yellow motorcycle turn signal lamps may be used as warning lamps on the rear of motorcycles.
(d) **Permitted Blue Warning Lamps on Police Vehicles.** The additional flashing or steady burning blue warning lamp permitted by Vehicle Code Section 25258(b) shall be Class B, C, or E.
(e) **Required Yellow Warning Lamps on Tow Cars.** The flashing yellow warning lamp required on tow cars by Vehicle Code Section 25253 shall be a Class B, C, or E warning lamp.

The flashing yellow warning lamp permitted to be displayed to the rear of a tow car while towing a vehicle and moving at a speed slower than the normal flow of traffic may be a 360-degree revolving or gaseous discharge lamp. In such case, the front and side areas of the lens or transparent cover that extends back to 45 degrees to each side of the straight-to-the-rear axis of the lamp shall be covered with opaque material reaching to the top of the lighted area. A revolving lamp may instead be equipped with a device that turns each light source off during the forward three-fourths of its rotation.

(f) **Permitted Yellow Warning Lamps on Special Hazard Vehicles.** The flashing yellow warning lamps permitted on special hazard vehicles by Article 7 of Division 12 of the Vehicle Code beginning with Section 25252, shall be a Class B, C, or E warning lamp, depending on whether the lamp is permitted to be displayed only to the front and rear or to the front, sides, and rear.

(g) **Warning Lamps for Undercover Cars.** The required steady-burning ~~front~~ forward-facing warning lamps on authorized emergency vehicles with special plates permitted by Vehicle Code Section 5001 ~~may~~ shall be a class A, B, or C. This warning lamp may also be a fixed or handheld red spotlamp with a filament of at least 30 ~~W~~ watts, and producing at least 3,000 ~~cd~~ candela in red at the brightest point in the beam. Such a lamp need not meet any of the other requirements of this article except for color. Additional steady-burning or flashing warning lamps shall be class A, B, C, or E. These warning lamps may be displayed through transparent or translucent material provided the light, of proper color, is plainly visible and understandable in bright sunlight and during darkness, under normal atmospheric conditions, to a distance of 800 feet from the vehicle. These lights shall not transfigure, disrupt or mask any other required lighting device.

(5) The Title for Table 1 is amended to read:

TABLE 1. MINIMUM CANDELA FOR ~~STATIONARY~~ STEADY-BURNING WARNING LAMPS ~~WITH TUNGSTEN FILAMENTS~~ AND FLASHING WARNING LAMPS WHICH ALTERNATE BETWEEN ON AND OFF BY ELECTRICALLY CONTROLLING THE CURRENT